Four new *Drosera* taxa from south western Australia

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Abstract

Lowrie, Allen and Marchant, Neville. Four new *Drosera* taxa from south western Australia. Nuytsia 8(3): 323-332 (1992). Three new species and one new subspecies of *Drosera* (Droseraceae) are described, *D. browniana* and *D. stolonifera* subsp. *monticola* (both tuberous *Drosera*) and *D. grievei* and *D. sargentii* (both pygmy *Drosera*), all endemic to south western Australia. The distinguishing characters of each are presented as well as their relationships and an indication of habitat preferences and conservation status.

Introduction

The south west of Western Australia is renowned for its richness of vascular plant species and its high degree of endemism. Fifty-four species of *Drosera* were recorded in Australia by Marchant and George (1982); of these, 42 species were then known to occur in the south west of Western Australia. The number of species now known to occur in this region is 68.

Since the publication of the first two volumes of Carnivorous Plants of Australia (Lowrie 1987, 1989), Allen Lowrie has made extensive field studies and has discovered a number of new *Drosera* taxa. As well as extensive field studies, he has propagated and cultivated all known species. Neville Marchant has made extensive herbarium studies including examination of almost all *Drosera* type specimens. In an endeavour to combine information from these varied sources the present authors have collaborated to circumscribe and publish new taxa.

Descriptions

1. Drosera browniana A. Lowrie & N. Marchant, sp. nov. (Figure 1)

Drosera bulbosa Hook. subsp. *bulbosa* affinis sed flore in statu fructificanti erecto, petalis obovatis apice truncato-crenato, extus roseis, intra albis, 7-10 mm longis, 4-6.5 mm latis.

Typus: 0.9 km south of the rock cairn on Hatters Hill goldmine, 0.1 km west of the road on the summit of a granite outcrop, Western Australia, *Allen Lowrie* 99, 2/9/90 (holo: PERTH; iso: MEL, RSA).

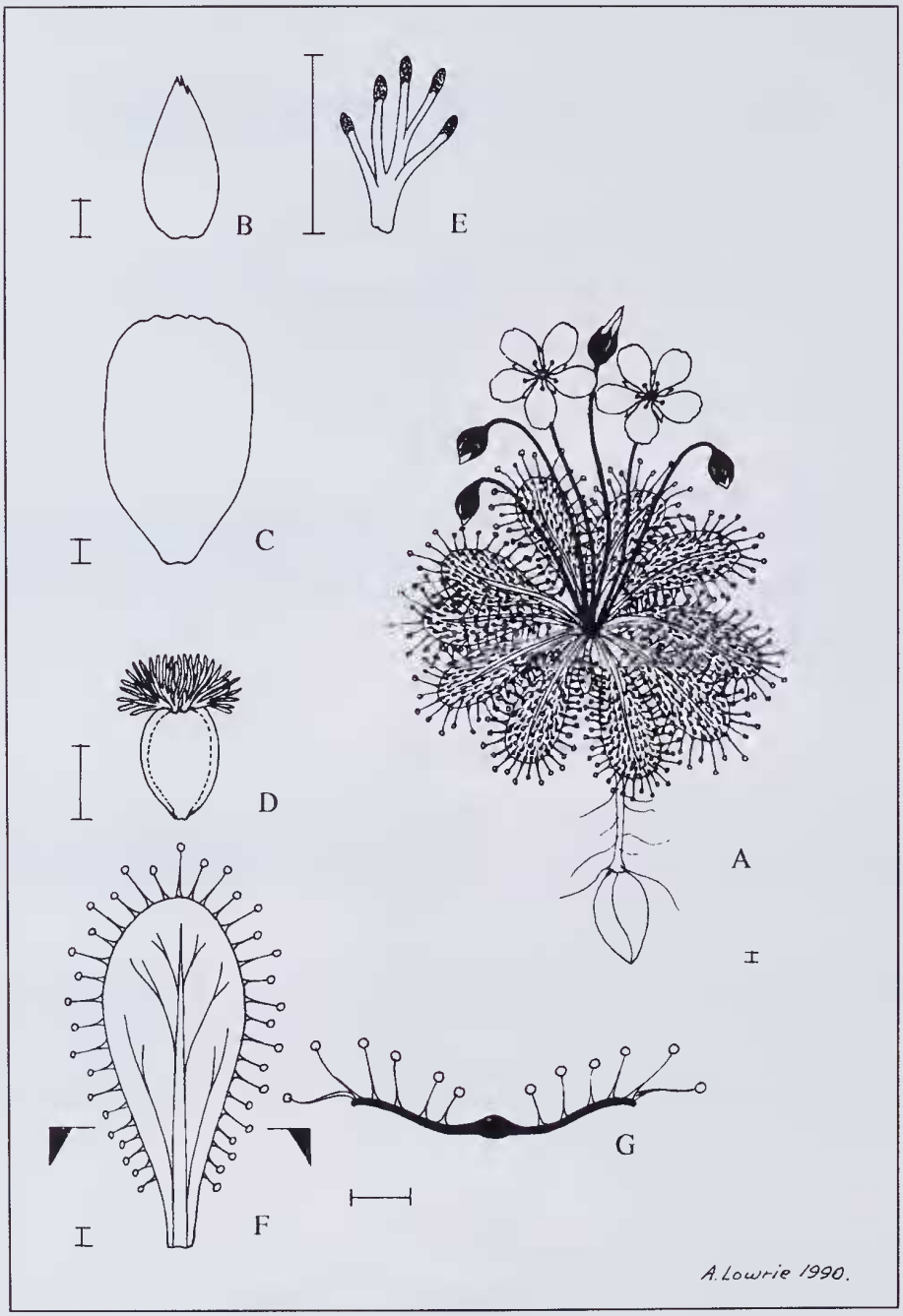

Figure 1. *Drosera browniana* A. Lowrie and N. Marchant
A - mature plant in flower; B - sepal; C - petal; D - ovary with styles; E - part of style and stigmas, enlarged; F - leaf lamina; G - T.S. of leaf lamina as indicated on F. Scale bar for all = 1 mm

Tuberous herb. Underground stem 4-6 cm long. Leaves all in a flat basal rosette; lamina obovate, 18 mm long, 10-12 mm wide; petiole 7 mm long, 3 mm wide. Scapes 1-20, 4-10 cm long, single-flowered, erect in fruit. Calyx lobes ovate, united at the base, margin entire, apex serrate, 4.5 mm long, 2 mm wide. Petals distally pink, proximally white, obovate, apex truncate-crenate, 7-10 mm long, 4-6.5 mm wide. Ovary ovoid, 1.5 mm long and 1.3 mm in diameter at anthesis. Styles 3, 1 mm long, branched repeatedly from near the base into numerous filiform segments, forming a dense, rounded tuft; stigmas subclavate.

Affinities. Drosera browniana possesses a tuber with a vertical stolon with prophylls and a rosette of flat leaves with a broad petiole; stipules are absent. Thus, it belongs in *Drosera* subg. *Ergaleium* DC. sect. *Erythrorhizae* (Planchon) Diels.

D. macrophylla Lindley and *D. bulbosa* Hook. and its subspecies are morphologically similar to *D. browniana*. The three taxa can easily and reliably be differentiated by the characters which are presented in the following synoptic key:-

1. Leaves of the rosette up to 12 cm long at maturity
   2. Scapes 4-6-flowered; sepals entire ..... *D. macrophylla*
   2. Scapes 1-flowered; sepals serrate ..... *D. bulbosa* subsp. *major*
1. Leaves of the rosette less than 3 cm long at maturity
   3. Styles divided; scapes erect in fruit; petals pink and white; flowers August-September ..... *D. browniana*
   3. Styles undivided; scapes secund in fruit; petals white; flowers May-June ..... *D. bulbosa* subsp. *bulbosa*

Distribution. Drosera browniana is a widely scattered species and is quite common on soils associated with the narrow greenstone belt from Mt Holland (Lat. 32° 10'S, Long. 119° 44'E), to Hatters Hill (Lat. 32° 49' S, Long. 119° 59' E), a distance of 85 km.

Habitat and phenology. Drosera browniana grows in small depressions which are filled with brown loam soil on weathered granitic rock outcrops. The outcrops are generally only a metre or so higher than the surrounding country and are usually concealed in thickets of gimlet trees (*Eucalyptus* species). Rainfall in this region is generally low and restricted to late autumn and winter (May to August).

The leaves of *Drosera browniana* appear from the tubers in June and flowering occurs in August and September. In the dry period of the year *Drosera browniana* survives as dormant underground tubers until the onset of winter rains.

Other collections. WESTERN AUSTRALIA: Hatters Hill, intersection of pipeline track and main Hatters Hill bypass road. Western Australia, Lat. 32° 49' S, Long. 119° 59' E, *Paul G. Armstrong*, 24 Aug. 1990 (PERTH).

Conservation status. A relatively widespread species in native bushland east of cultivated areas and not under current threat.

Etymology. This species is named after Andrew Brown, an enthusiast of native orchids and officer of the Department of Conservation and Land Management who discovered the first population.

2. Drosera stolonifera Endl. subsp. **monticola** A. Lowrie & N. Marchant, subsp. nov. (Figure 2)

Typus: Summit of Toolbrunup Peak, Stirling Range National Park, *P. Mann* 14/11/89 (holo: PERTH).

Drosera stolonifera Endl. subsp. *compacta* N. Marchant affinis sed stolonibus et tuberibus hypogaeis in statu maturo persaepe praesentibus, caulis parte hypoggaeis 3.5 cm longis, stolonibus adventitiis parum abbreviatis, petalis roseis usque ad 4 mm longis, ovario elliptico.

Tuberous herb with a vertical stolon up to 3.5 cm long which may branch to produce additional terminal tubers. Above ground stem more or less erect, 2-7 cm long; leaves basal and cauline, stem usually not developed in non-flowering specimens. Basal leaves rosetted, lamina spathulate, 4 mm long, 6 mm wide, more or less flat; petiole flattened, 4 mm long, 1.5 to 2 mm wide, dilated in upper part. Cauline leaves usually scattered, rarely sub-opposite or whorled, lamina flabellate, 5 mm long, 8 mm wide, distinctly concave; petiole 10 mm long, 1 mm wide, channelled above. Flowers terminal. Scape few-flowered, 5 cm long, glabrous; pedicels 8 mm long. Calyx lobes united at the base, ovate, 4 mm long, 2 mm wide, lower margin entire, upper margin and apex irregularly dentate-crenate. Petals obovate, 8 mm long, 5 mm wide, pale-pink with dark-pink closely spaced flabellate veining. Ovary ellipsoid, 1.3 mm long, 1.2 mm in diameter at anthesis. Styles 3, 0.8 mm long, each divided into many terete segments, half of them forming an irregular horizontally spreading whorl, the remainder erect; stigmas terete.

Distribution. Drosera stolonifera subsp. *monticola* is common on the summits of Toolbrunup Peak and Bluff Knoll. It is likely to occur on the summits of other peaks in the eastern part of the Stirling Range.

Habitat. Restricted to winter moist, black or brown loamy soils on ledges and in shallow depressions, often growing with moss. Only recorded from the upper slopes and summits which are frequently cloud-covered and are usually very moist.

Flowering period. Only recorded for November. The flowering period is probably between October and December.

Affinities. Drosera stolonifera subsp. *monticola* belongs in subg. *Ergaleium* DC. sect. *Stolonifera* DeBuhr because it possesses a tuber and has leaves in a basal rosette as well as cauline leaves.

Drosera stolonifera subsp. *compacta* N. Marchant is considered to be the taxon most similar to *Drosera stolonifera* subsp. *monticola*. The former subspecies occurs in heathland from the Stirling Range to the south coast and can be readily separated from the new subspecies by its flower colour, stolon morphology and petiole length. The morphological differences between the two taxa are presented in the following synoptic key:-

1. Petals pink; additional below-ground stolons and tubers often present at maturity; petioles up to 4 mm long; ovary ellipsoid ..... *D. stolonifera* subsp. *monticola*
1. Petals white; additional below-ground stolons and tubers absent, the lower stem prostrate; petioles 5-30 mm long; ovary subglobose ..... *D. stolonifera* subsp. *compacta*

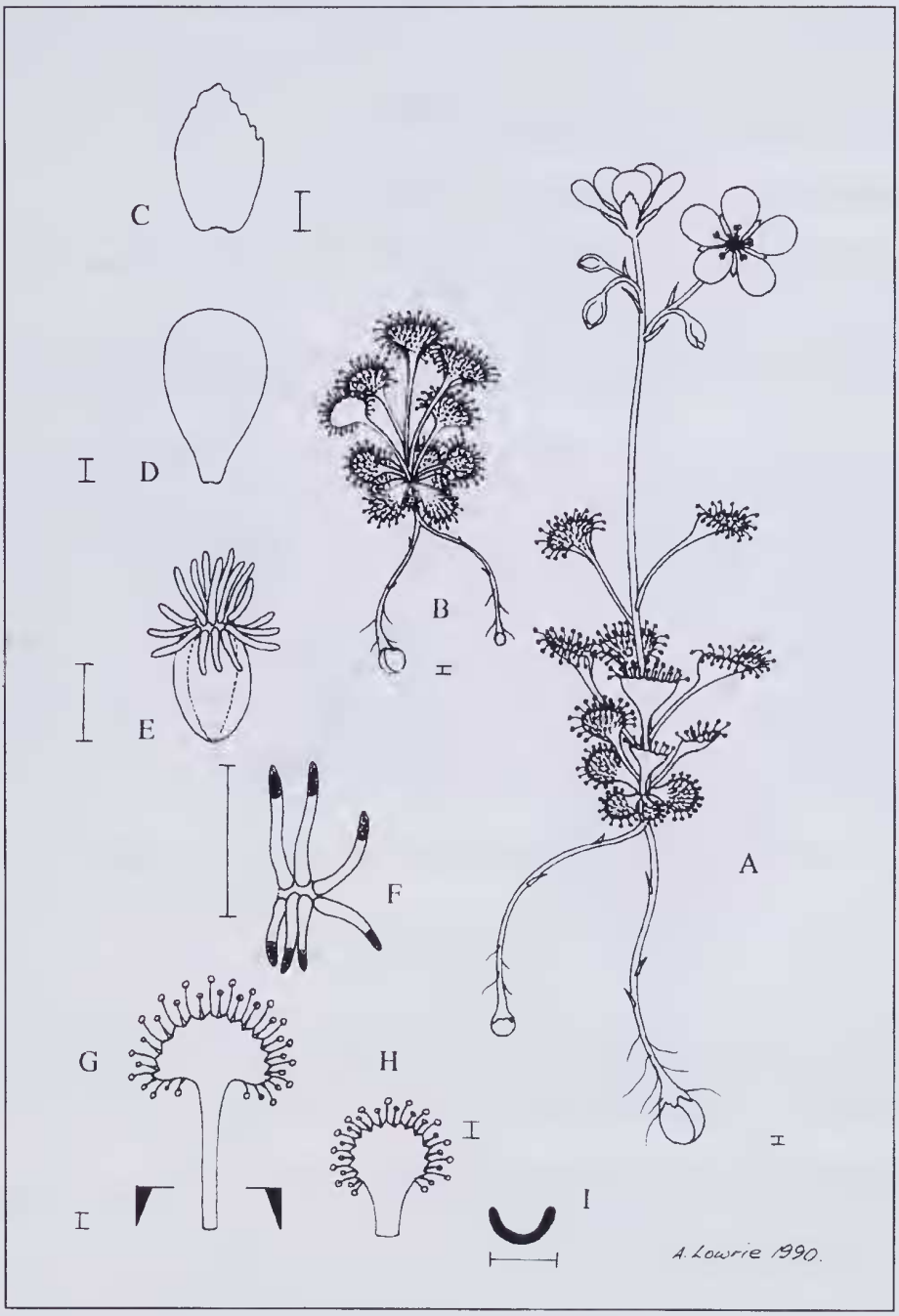

Figure 2. *Drosera stolonifera* subsp. *monticola* A. Lowrie and N. Marchant
A - mature plant in flower; B - mature non-flowering plant; C - sepal; D - petal; E - ovary with styles; F - part of style and stigmas, enlarged; G - cauline leaf lamina; H - basal leaf lamina; I - T.S. of cauline leaf petiole as indicated on G. Scale bar for all = 1 mm

Conservation status. Relatively common in the Stirling Range National Park where it is apparently not under threat.

Etymology. This new subspecies is restricted to the upper parts of the Stirling Range hence the epithet, *monticola*, referring to its mountain habitat.

3. Drosera grievei A. Lowrie & N. Marchant, sp. nov. (Figure 3)

Drosera paleacea DC. subsp. *paleacea* affinis sed scapo uno usque ad 3 cm longo, 5-10-floris, sepalis perlato-obovatis 2.5 mm longis, 2.5 mm latis.

Typus: At the east end of Baanga Hill road, near the junction of Sennetts Lake Road, c. 20 km east of Lake King township, Western Australia, *Allen Lowrie* 25/9/89 (holo: PERTH; iso: MEL).

Fibrous rooted herb forming a compact convex rosette to 1.2 cm diameter. Stem to 2 cm long, covered with the withered remains of the previous seasons growth. Leaves 20-30. Lamina orbicular, subpeltate, 0.7 mm diameter; petiole 3.6 mm long, 0.5 mm wide at the base, dilated to 0.8 mm wide in the lower part, 0.2 mm wide at the apex. Stipule bud ovoid, 3 mm long, 2 mm diameter, with setae. Stipules 3-lobed, 5 mm long, 4 mm wide; the central lobe divided into 2 segments, each segment in turn divided into two segments narrowing to setae, lateral lobes with a short segment on the outer margin near the base, and two asymmetrically bifurcate apical lobes. Inflorescence racemose; scape 1, to 3 cm long, covered with minute short broad glands; flowers 5 to 10; pedicels 2.5 mm long, semi-erect in fruit. Calyx lobes very broadly obovate, united at the base, 2.5 mm long, 2.5 mm wide, apex irregularly dentate. Petals white, oblong, 4.0-4.5 mm long, 2 mm wide. Ovary turbinate, 0.7 mm long, 1 mm diameter at anthesis. Styles 4, spreading horizontally, 0.5 mm long, 0.1 mm diameter; stigmas falcate, 1.2 mm long, 0.15 mm diameter, apex subacute. (Figure 3)

Distribution. Known only from two locations, 30 km apart, in the eastern wheatbelt south-east of Hyden.

Habitat. In clayey sand on heathland under and between low shrubs.

Affinities. D. grievei belongs in *Drosera* subg. *Rorella* (DC.) Diels, sect. *Lamprolepis* Planchon because it has rosetted leaves, prominent stipules, many-flowered scapes and it reproduces by propagules. *D. paleacea* DC. subsp. *paleacea* is considered the closest relative of *Drosera grievei* but differs from it in the features presented in the synoptic key below:-

1. Scapes 5-10-flowered; sepals very broadly obovate, 2.5 mm long, 2.5 mm wide. Petals oblong, 4-4.5 mm long ..... *D. grievei*
1. Scapes 30 or more-flowered; sepals obovate, 1.5 mm long, 0.7 mm wide. Petals obovate, 3-4 mm long .....*D. paleacea* subsp. *paleacea*

Conservation status. Threatened. Currently known from only two roadside locations in an area which has been extensively cleared for farmland.

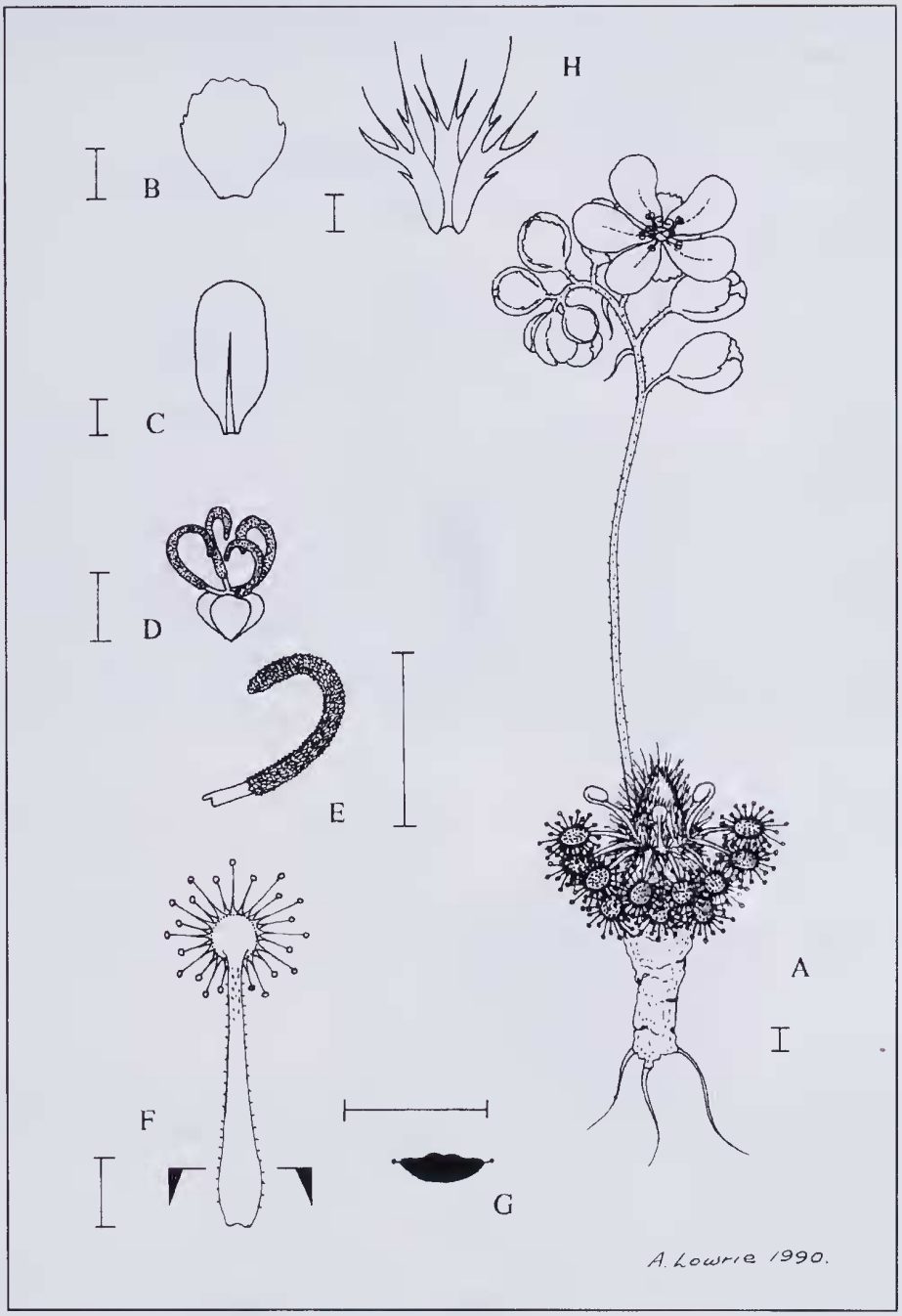

Figure 3. *Drosera grievei* A. Lowrie and N. Marchant
A - mature plant in flower; B - sepal; C - petal; D - ovary with styles; E - part of style and stigma, enlarged.
F - leaf lamina; G - T.S. of leaf petiole as indicated on F. Scale bar for all = 1 mm

Etymology. Drosera grievei is named in honor of Brian James Grieve (1907-), Professor Emeritus, who has provided the only comprehensive means of identifying the rich flora of southern Western Australia. From 1954 Professor Grieve has produced the outstanding series of books "How to Know Western Australian Wildflowers".

4. Drosera sargentii A. Lowrie & N. Marchant, sp. nov. (Figure 4)

Drosera parvula Planchon affinis sed stipula-gemma conicis, 6 mm longa, 4 mm diam., setis longissimis dense obtectis.

Typus: At the junction of Stockyard Road and Merivale Road, in the S.E. corner, c. 20 km E of Esperance, Western Australia, *Allen Lowrie* 22/11/89 (holo: PERTH; iso: MEL).

Fibrous rooted herb forming a compact convex rosette up to 1.5 cm diameter. Stem to 2 cm long, covered with the withered remains of the previous seasons growth. Leaves 20-50. Lamina orbicular, almost peltate, 0.8 mm diameter; petiole 3.8 mm long, 0.5 mm wide from the base for a third of the length, the upper part 0.2 mm wide. Stipule bud conical, 6 mm long, 4 mm diameter, with extremely long setae. Stipules shortly 3-lobed, 1.5 mm long, 1.7 mm wide, lobes truncate, the central lobe with 5 short fringes, the lateral lobes with 3 short fringes and a 5 mm long seta adjacent to the mid-lobe. Inflorescence racemose; scapes 1 to 2, up to 5 cm long, glabrous; flowers 20 to 40; pedicels 1 mm long, pendulous in fruit. Calyx lobes glabrous, ovate, united at the base,1.5 mm long, 0.9 mm wide, margin entire, apex slightly serrate, Petals white, obovate, 3 mm long, 2 mm wide, entire. Ovary obovoid, 0.4 mm long, 0.5 mm diameter at anthesis. Styles 3, white, semi-erect, 0.3 mm long, 0.1 mm diameter; stigmas white, falcate-clavate, 1.1 mm long, 0.1 mm diameter at the base, dilated to 0.15 mm diameter near the rounded apex.

Distribution. Drosera sargentii is a common species in the coastal regions between Esperance and Cape Le Grand National Park.

Habitat. In deep, white siliceous soil on heathland. At many locations it grows with the widespread, white-flowered species *Drosera scorpioides.*

Flowering period. November-December.

Affinities. D. sargentii belongs in *Drosera* subg. *Rorella* (DC.) Diels, section *Lamprolepis* Planchon because it has rosetted leaves, prominent stipules, many-flowered scapes and it reproduces by propagules. *D. parvula* Planchon is considered here to be species most similar to *Drosera sargentii.* The two taxa differ in the features presented in the following synoptic key:-

1. Stipule bud forming a conical tuft, densely covered with extremely long setae; pedicels pendulous in fruit; sepals 1.5 mm long; petals 3 mm long ..... *D. sargentii*
1. Stipule bud forming an ovoid tuft, with short setae covering the lower part and long setae at the apex; pedicels semi-erect in fruit; sepals 3-4 mm long; petals 4-6 mm long ..... *D. parvula*

Conservation status. A common and apparently widespread species not under current threat.

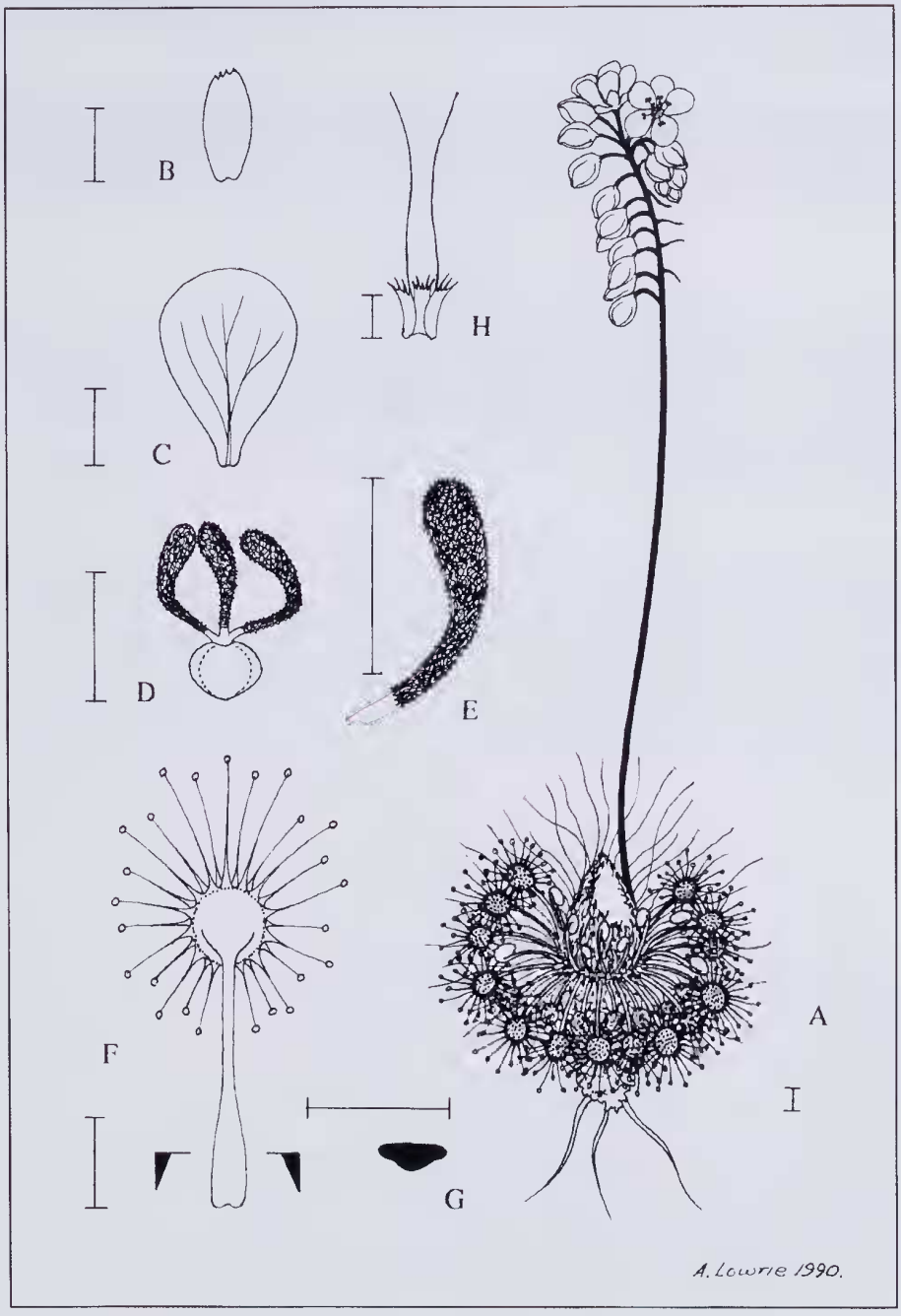

Figure 4. *Drosera sargentii* A. Lowrie and N. Marchant
A - mature plant in flower; B - sepal; C - petal; D - ovary with styles; E - part of style and stigma, enlarged; F - leaf lamina; G - T.S. of leaf petiole as indicated on F. Scale bar for all = 1 mm

Etymology. Drosera sargentii is named in honour of Oswald Hewlett Sargent (1880-1952), a Pharmacist of York, Western Australia, who made a major contribution to Western Australian botany including studies on the genus *Drosera*.

This new species of pygmy sundew was discovered by Allen Lowrie and Steve Rose in 1988 when it had just finished flowering. The following season, flowering specimens were found and brought into cultivation for closer study.

References

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